

MULTIMEDIA



UNIVERSITY

STUDENT ID NO

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# MULTIMEDIA UNIVERSITY

## FINAL EXAMINATION

TRIMESTER 2, 2019/2020

**TDC 1231 – Data Communications and Networking**  
( All sections / Groups )

11 March 2020  
9.00 am – 11.00 am  
( 2 Hours )

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### INSTRUCTIONS TO STUDENTS

1. This question paper consists of 6 printed pages (including cover page) with 5 questions only.
2. Attempt **ALL Questions**. All Questions carry equal marks (10 marks). The distribution of the marks for each question is given.
3. Please print all your answers in the answer booklet provided.

**QUESTION 1 [10 marks]**

i. Which of the following is the component in data communication system?

- A) protocol
- B) language
- C) address
- D) time

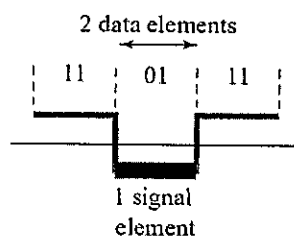
ii. In a fully connected mesh topology with twenty (20) links, we need \_\_\_\_\_ computers.

- A) 10
- B) 40
- C) 25
- D) 5

iii. Which of the following is NOT the component in unshielded twisted pair (UTP)?

- A) conductor
- B) metal shield
- C) plastic cover
- D) insulator

iv. What is the value of  $r$  for the following diagram?



- A) 1
- B) 2
- C) 1/2
- D) 6

v. Identify the disadvantage of parallel transmission.

- A) cost
- B) processing time
- C) speed
- D) delay

**Continued.....**

- vi. Find the Hamming distance between d(0101, 1110).
- A) 1
  - B) 5
  - C) 2
  - D) 3
- vii. Frequency-division multiplexing (FDM) is a/an \_\_\_\_\_ technique.
- A) digital
  - B) analog
  - C) hybrid
  - D) signal
- viii. \_\_\_\_\_ and \_\_\_\_\_ are intradomain routing protocols.
- A) RIP, BGP
  - B) RIP, OSPF
  - C) OSPF, BGP
  - D) IS-IS, OSPF
- ix. A \_\_\_\_\_ operates in both the physical and data link layers.
- A) repeater
  - B) hub
  - C) bridge
  - D) router
- x. The MAC address is sent \_\_, byte by byte; for each byte, it is sent \_\_, bit by bit.
- A) left to right, left to right
  - B) right to left, left to right
  - C) right to right, right to right
  - D) left to right, right to left

**QUESTION 2 [10 marks]**

- i. Which of the following is NOT the responsibilities of the data link layer?
- A) Framing
  - B) Physical addressing
  - C) Flow control
  - D) Transmission mode

Continued.....

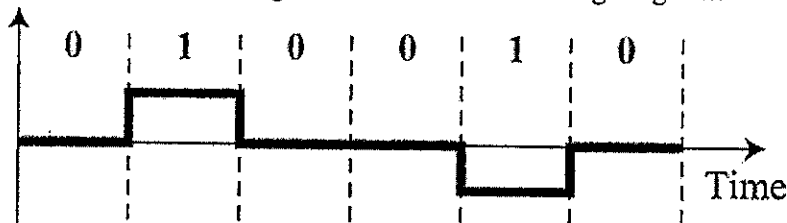
ii. The period of a signal is 20 ms. What is its frequency in kilohertz?

- A)  $5 \times 10^{-2}$  kHz
- B)  $2 \times 10^{-2}$  kHz
- C)  $5 \times 10^2$  kHz
- D)  $2 \times 10^2$  kHz

iii. \_\_\_\_\_ is used for \_\_\_\_\_ distance while \_\_\_\_\_ is used for \_\_\_\_\_ distance.

- A) single mode, long, multimode, short
- B) single mode, short, multimode, long
- C) single mode, long single mode, short
- D) multimode, long multimode, short

iv. What is the line coding schemes for the following diagram?



- A) AMI
- B) NRZ-L
- C) Differential Manchester
- D) RZ

v. Which of the following is NOT a Data communications equipment (DCE)?

- A) modem
- B) switch
- C) hub
- D) laptop

vi. Which of the following is used for error correction?

- A) checksum
- B) cyclic codes
- C) hamming code
- D) polynomials

Continued.....

vii. In \_\_\_\_\_, the amplitude of the information signal changes, the phase of the carrier changes correspondingly.

- A) FDM
- B) DSSS
- C) FHHS
- D) TDM

viii. Which of the following is NOT the process phase in circuit-switched network?

- A) connection setup
- B) data transfer
- C) protocol negotiation
- D) connection teardown

ix. To minimize the chance of collision, \_\_\_\_\_ is applied in wired network and \_\_\_\_\_ is applied in wireless network.

- A) CSMA/CA, CSMA/CD
- B) CSMA/CD, CSMA/CA
- C) CSMA/CA, CSMA/CA
- D) CSMA/CD, CSMA/CD

x. \_\_\_\_\_ is the Bluetooth network with only one master node.

- A) piconet
- B) scatternet
- C) nanonet
- D) ultranet

**Continued.....**

**QUESTION 3 [3+2+2+3 marks]**

- (a) Produce **THREE** diagrams to differentiate simplex, half-duplex, or full-duplex.
- (b) A digital signal has 980 levels. How many bits are needed per level?
- (c) List **TWO** examples of unguided transmission media.
- (d) Produce the waveforms of biphase Manchester for 101000110.

**QUESTION 4 [2+3+4+1 marks]**

- (a) List **ONE** advantage and **ONE** disadvantage of parallel transmission.
- (b) Explain amplitude shift keying, frequency shift keying and phase shift keying.
- (c) Compute the codeword if dataword is 1001 and its divisor is 1011. Show your calculation steps.
- (d) What is multiplexing?

**QUESTION 5 [3+3+4 marks]**

- (a) List **THREE** considerations of distance vector implementation in Routing Information Protocol (RIP).
- (b) List **THREE** reasons why CSMA/CD algorithm does not work in wireless LANs. Subsequently, state the solution that was invented to replace CSMA/CD in wireless LANs.
- (c) Given 00101101 00010010 10001100 10100001 11010010 01011110 as a set of address bit received at receiver device, compute the physical address.

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